Amendments to the Claims:

1. (Currently Amended) A <u>computer-implemented</u> method of performing network packet filtering <u>on packets received on a network using a set of rules</u>, said method comprising:

dividing a <u>the</u> set of rules along N dimensions;

dividing each of said N dimensions into rule ranges using said set of rules;

generating a set of possible rules for each rule range in each of said N dimensions;

<u>receiving a set of one or more packets on a network;</u>

searching said rule ranges along said N dimensions in parallel to select N sets of possible rules along said N dimensions;

logically combining said N sets of possible rules to generate a final set of rules;

applying said final set of rules;

repeating said steps of searching, logically combining, and applying for each <u>received</u> packet to filter;

receiving a new rule;

examining the new rule to determine if the new rule specifies a new dimension; and

if it is determined that the new rule specifies a new dimension, adding the new rule to the set of rules, adding the new dimension to the N dimensions, dividing said set of rules along N + 1 dimensions, dividing each of said N + 1 dimensions into rule ranges using said set of rules, and generating a set of possible rules for each rule range in each of said N + 1 dimensions.

2. (Previously Presented) The method as claimed in claim 1 wherein generating a set of possible rules for each rule range in each of said N dimensions comprises generating a rule bit vector for each rule range along each of said N dimensions.

3. (Previously Presented) The method as claimed in claim 1 further comprising:

generating a search structure for each of said N dimensions to locate a specific rule range.

4. (Original) The method as claimed in claim 3 wherein one of said search structures comprises a look-up table.

5. (Original) The method as claimed in claim 3 wherein one of said search structures comprises a tree search structure.

6. (Previously Presented) The method as claimed in claim 1 wherein applying said final set of rules comprises selecting a highest priority rule in said final set of rules.

7.(Previously Presented) The method as claimed in claim 1 wherein applying said final set of rules comprises applying more than one rule in said final set of rules.

8. (Original) The method as claimed in claim 1 wherein each of said N sets of possible rules comprise a rule bit vector that specifies a set of rules that may apply.

9. (Original) The method as claimed in claim 8 wherein said rule bit vectors are logically ANDed together to produce a final bit vector of rules that apply.

10. (Previously Presented)   The method as claimed in claim 9 wherein applying said final set of rules comprises selecting a highest priority rule in said final set of rules.

11-27. (Canceled)

28. (Previously Presented)   The method as claimed in claim 1 wherein each rule range comprises a range identifier.

29. (Previously Presented)   The method as claimed in claim 28 wherein said range identifier comprises a rule bit vector that specifies a set of rules that may apply to incoming data units that fall within the associated rule range.

30. (Previously Presented) The method as claimed in claim 29 wherein said rule bit vectors are logically ANDed together by a rule processor to produce a final bit vector of rules that apply.

31. (Previously Presented) The method as claimed in claim 28 wherein said range identifier comprises an index value.

32. (Previously Presented) The method as claimed in claim 31 wherein said index values are used by a rule processor to index into a N dimensional look-up table for a final rule.

33. (New) A computer program product comprising a computer readable medium having instructions stored thereon when executed filter packets received on a network using a set of rules, the computer program product comprising sets of instructions for:

dividing the set of rules along N dimensions;

dividing each of said N dimensions into rule ranges using said set of rules;

generating a set of possible rules for each rule range in each of said N dimensions;

receiving a set of one or more packets on a network;

searching said rule ranges along said N dimensions in parallel to select N sets of possible rules along said N dimensions;

logically combining said N sets of possible rules to generate a final set of rules;

applying said final set of rules;

repeating said steps of searching, logically combining, and applying for each received packet;

receiving a new rule;

examining the new rule to determine if the new rule specifies a new dimension; and

if it is determined that the new rule specifies a new dimension, adding the new rule to the set of rules, adding the new dimension to the N dimensions, dividing said set of rules along N + 1 dimensions, dividing each of said N + 1 dimensions into rule ranges using said set of rules, and generating a set of possible rules for each rule range in each of said N + 1 dimensions.

34. (New) The computer program product as claimed in claim 33 wherein the set of instructions for generating a set of possible rules for each rule range in each of said N dimensions comprises a set of instructions for generating a rule bit vector for each rule range along each of said N dimensions.

35. (New) The computer program product as claimed in claim 33 further comprising a set of instructions for:

generating a search structure for each of said N dimensions to locate a specific rule range.

36. (New) The computer program product as claimed in claim 33 wherein the set of instructions for applying said final set of rules comprises a set of instructions for selecting a highest priority rule in said final set of rules.

37. (New) The computer program product as claimed in claim 33 wherein the set of instructions for applying said final set of rules comprises a set of instructions for applying more than one rule in said final set of rules.